

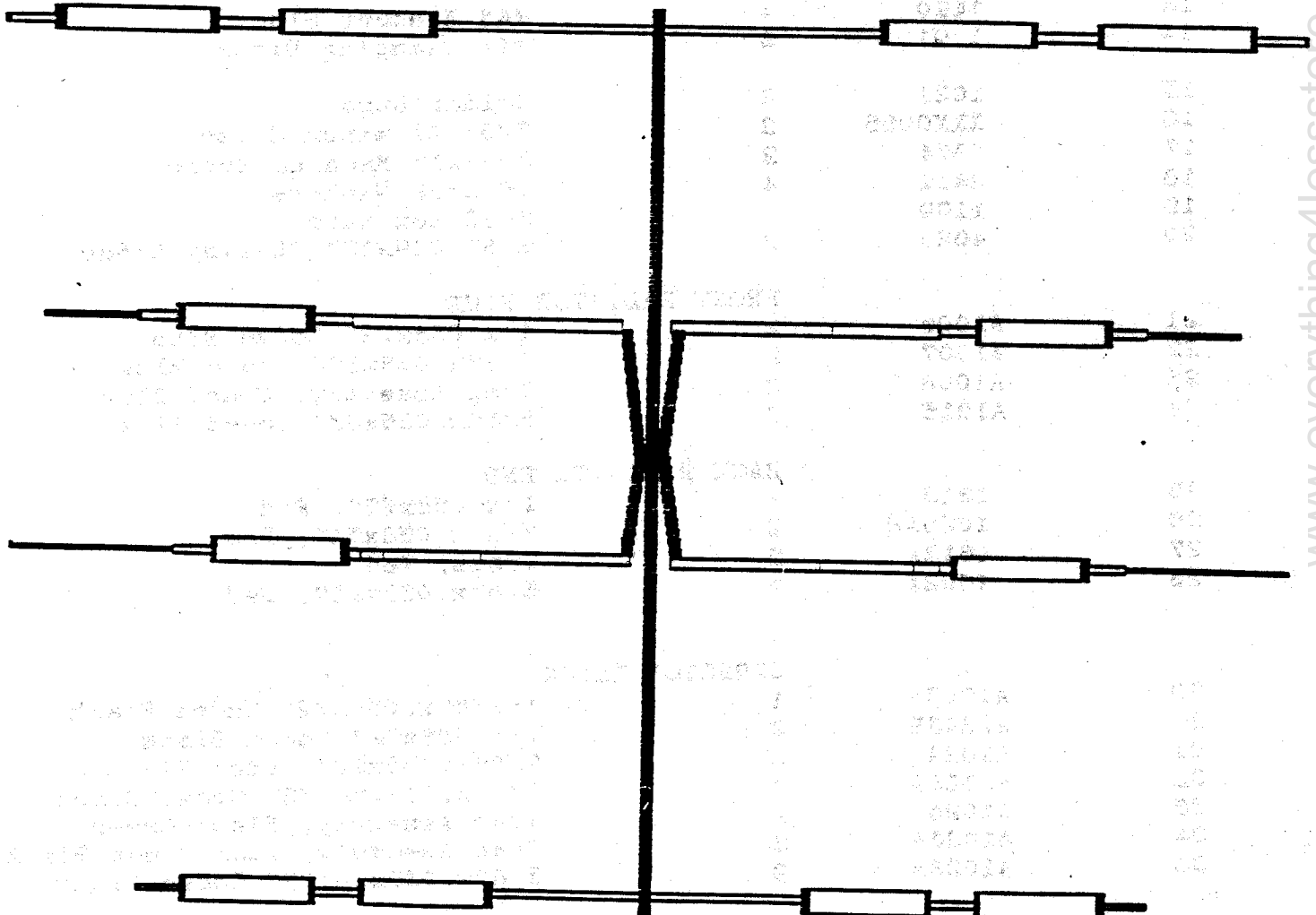
56¢ 299

# MOSLEY

TA-53-M

10-12-15-17-20 METER BEAM

THREE ELEMENT ON ALL 5 BANDS!



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Parts List for  
TA-53-M  
V 1.0

Item #	Part #	Quan.	Description
1	A1001	2	Element Support
2	A1002	8	Insulator Block
3	1003	16	10-32 x 1-1/4" Screw
4	1004	24	#10 Lockwasher
5	1005	8	10-32 x 1-3/4" Screw
6	1017	32	#8x1/2" SS Sheet Metal Screw
7	1016	8	5/8" End Cap
8	1036	4	Element Caps, 7/8" Inner
9	1133	2	2" Boom Caps
10	A1187	2	2" U Bolts, 5/16" SS
11	1188	4	5/16-18, Lock Washer
12	1189	4	5/16" SS Nut
13	1190	4	#48 Element Block
14	1191	6	#47 Clamping Block
15	1021	2	Solder Lugs
16	XXX0065	2	3/8" Aluminum Clamp
17	2374	2	8-32x1" Machine Screw
18	2412	4	#8 Lock Washers
19	1199	4	8-32 Hex Nuts
20	4623	2	3/8".049x33" Phasing Lines
FRONT RADIATOR BLUE			
21	A1006	2	1"x.058x72" Coded Blue
22	A1007	2	7/8"x.058x36" Coded Blue
23	A1008	2	Trap Assembly, Coded Blue
24	A1015	2	5/8"x.035x33" Coded Blue
BACK RADIATOR RED			
25	1313	2	1"x.058x72", Red
26	1025AR	2	7/8"x.058x54", Red
27	4612A	2	Traps, Red
28	4602A	2	5/8"x.035x21", Red
DIRECTOR BLACK			
29	A1343A	1	1-1/8"x.058x72" Coded Black
30	A1343B	2	1"x.058x72" Coded Black
31	A1024	2	7/8"x.058x20" Coded Black
32	A1024A	2	7/8"x.058x5-1/2" Coded Black
33	A1026	2	Trap Assembly, Black-Green
34	A1026A	2	Trap Assembly, Black-Green-Black
35	A1028A	2	5/8"x.035x6-1/2" Coded Black

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33	A1026	2	Trap Assembly, Black-Green
34	A1026A	2	Trap Assembly, Black-Green-Black
35	A1028A	2	5/8"x.035x6-1/2" Coded Black

ASSEMBLY INSTRUCTIONS FOR  
THE TA-53-M

CAUTION: Coil Assemblies are color coded on one end only. This color code MUST ALWAYS be installed pointing in toward the center of the antenna, toward the BOOM.

NOTE: Added protection to Color Code. To insure proper placement of the traps, you can use a piece of masking tape marked and placed on the trap cover showing the end with the color code. This will prevent confusion if the color code is rubbed off when adding the penetrox to the tubing.

REVERSAL OF TRAPS WILL CAUSE HIGH SWR AND OTHER MALFUNCTIONS OF BEAM!

DO! MAKE SURE YOU PLACE A SMALL AMOUNT OF PENETROX ON ALL TELESCOPING PIECES OF TUBING.

DON'T EVER OPEN TRAPS AND PLACE PENETROX ON THE INSIDE OF THE TRAP!

READ DIRECTIONS CAREFULLY! Mosley antennas go together very easily. Review the drawings and instructions BEFORE starting assembly.

PREPARING COAX

(FIGURE 1)

> To attach 1021 solder lugs to coax, strip back the braid only 2-1/2" and make a twisted lead out of the braided wire side. Solder the 1021 solder lug a 1/4" down from the end of this braided leg.

< > Trim back the insulation of the center of the coax a 1/4" and solder the 1021 lug.

< > Tape the "Y" between the 2 leads with a good 3M type tape and also tape up each leg to the 1021 solder lug. If this is done correctly, with a good tape, nothing else is needed to seal the coax.

< > The above step needs to be done so it can be ready in the following steps.

BEFORE ASSEMBLY REVIEW ALL PARTS

< > Check the parts list to make sure all of the parts are there. (If you think a piece of tubing is missing CHECK ALL OF THE LARGER PIECES TO BE SURE IT ISN'T TELESCOPED INSIDE ANOTHER PIECE.)

< > If something is missing make sure you have your serial number ready when calling. To expedite any Warrantee claims call into our Engineering line for prompt service. 314-994-7872.



## ASSEMBLY

< > Begin assembly by grouping all elements and trap sections according to color code.

### ASSEMBLY OF BOOM

(FIGURE 2)

< > Assemble U BOLTS onto mast plate. (Items 44, 10, 11, 12, 14). Four U BOLTS will go on one side of mast plate to hold BOOM. Two U BOLTS will go on opposite of mast plate to hold antenna to MAST. Loosely install the U BOLTS so that further assembly can be completed. Refer to drawing.

< > Once this is completed set aside until boom is assembled.

< > The boom is in 2 pieces. It is joined in the middle with a 1.768" OD splice. This splice and one inner end of the boom has a drill hole. This is to allow splice to be locked into position so that when the opposite end of the boom is slide over the splice it won't move out of position.

< > Insert Boom splice (Item 47, 45, 46), into half of boom with drill hole. Secure splice with #8 screw. (Items 6, 47, 45, 46).

< > Slide remaining section of boom over splice.

### Locking Boom Sections together.

< > Slide boom into the four U BOLTS on the mast plate and align the CENTER of the boom in the middle of the mast plate and the four U BOLTS.

< > Make sure boom sections are butted together.

< > Place four of the #47 Clamping Blocks between the boom and the mast plate, keeping the flat side of the clamping block against the mast plate side. (The curved side will hold the boom against the curved side of the U BOLT.)

< > Tighten down the U-Bolts on the Mast Plate at the Boom. (At this time leave the U-bolts for the mast, loose until later.)

### FRONT RADIATOR ASSEMBLY

Color Coded BLUE

(FIGURE 3, 3-A)

< > Loosely install the insulators blocks, (Item 2) to element support (Item 1) with screws and lock washers (Items 3 and 4).

< > Place the first element section of 1" tubing, (Item 21) into "V" of insulator block (Item 2) so that screw hole on BLUE color coded end of element (Item 21) is facing DOWN.

< > This is important to assure proper position of trap assembly that are provided with breather holes and must face downward.



< > Place screw (Item 5) through lock washer (Item 4) and 1" tubing coded BLUE (Item 21) and secure to outermost insulator (Item 2). DO NOT OVER TIGHTEN SCREW INTO INSULATOR BLOCK. TIGHTEN ENOUGH TO SEAT LOCK WASHER ONLY.

< > Phasing line will be attached to the inner insulator block. Please review the drawings concerning this attachment.

< > Note: The BEND IN THE PHASING LINES GO IN TOWARD EACH OTHER OVER THE BOOM. This will ensure that the lines are clear of the mast. Place the bend in the phasing lines NEAREST the mast.

< > Place screw, lock washer and Phasing line on top of 1" tubing at inner insulator block. (Items 5, 4, 20, 21, 2). DO NOT OVER TIGHTEN SCREW INTO INSULATOR BLOCK. TIGHTEN ENOUGH TO SEAT LOCK WASHER ONLY.

< > REMEMBER to keep the 3/8" tubing pointing inward at the bend toward each other. (See Drawing)

< > Repeat the above on the opposite side of BLUE element. Refer to drawing.

< > The next steps will require the use of PENETROX placed between the telescoping pieces of tubing. Have this ready to use.

(SUGGESTION: Cut a off a small corner of the PENETROX bag, this will allow you to squeeze out controlled amounts of the PENETROX. Use just a light amount rub over the end of the piece to be inserted with your finger. Be careful not to get this paste on clothing etc., it will not wash out!

< > Apply a small amount of penetrox on the overlapping pieces as you assemble.

< > Insert the Blue piece of 7/8" tubing color coded BLUE. (Item 22, 21).

< > Once setting is selected align the 7/8" tubing with the hole in the 1" tubing and secure with the #8 Stainless Screw. (Items 21, 22, 6). NOTE: ONCE SCREW SEATS DON'T OVER TIGHTEN OR YOU WILL STRIP OUT HOLE.

< > Insert Blue color coded end of trap into the exposed 7/8" tubing and secure with a #8 screw. (Items 22, 23, 6). MAKE SURE COLOR CODE IS IN TOWARD THE BOOM!

< > Insert the Blue color code 5/8" end tip into exposed end of trap and secure with #8 screw. (Items 23, 24, 6).

< > Slide on 5/8" end cap to end of element. (Items 24, 7).



> Insert the 7/8" O.D. plastic plug into the opened end of the 1" tubing at the 1st insulator block. (Items 8, 21). If the ridge on the 7/8 plug will not allow the plug to seat, trim the edge of the overlap with a nail clipper, so that it will lock into place on the inside of the 1" tubing.

< > Final check of BLUE RADIATOR: make sure element is correctly mounted on the Vee blocks, so that trap drain holes and element screws are downward as element sits on element support, and the traps color code is in toward the boom.

< > Repeat the above steps to complete opposite half of BLUE element.

< > Complete the remaining side of the element following the same procedure as above. Recheck that all traps color code are correctly pointing in toward the boom. Once the check is complete remove the masking tape from the trap.

This completes assembly of BLUE FRONT RADIATOR ASSEMBLY.

#### BLUE RADIATOR PLACEMENT ON THE BOOM (FIGURE 5)

< > Take assembled RADIATOR and place it over the BLUE color code on the top of the boom. Place one of the #48 clamping blocks under the element support, but over the boom. (Items 13, 10, 11, 12).

< > Place a U BOLT around the boom and through the #48 element support and rectangle element support. Secure with a 2" U-Bolt, lock washer and nut. (Items 10, 11, 12).

< > Before tightening U BOLTS completely make sure the element is at right angles to the mast plate. This will keep the elements horizontal when you attach the mast plate to the mast.

< > Tighten U Bolts on BLUE RADIATOR.

#### ASSEMBLY OF BACK RADIATOR COLOR CODED RED (FIGURE 3, 3-A)

< > Repeat the same steps as used on the Front Radiator Assembly. Follow the color code for RED. There is only ONE setting on this element. (Item 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 25, 26, 27, 28).

< > Check over the element to make sure Traps are in correctly and that drain holes are pointed downward.

< > Complete the remaining side of the element following the same procedure as above. Recheck that all traps color code are correctly pointing in toward the boom. Once the check is complete remove the masking tape from the trap.



### PLACEMENT OF RED RADIATOR

(FIGURE 5)

< > Since the mast plate is between the two radiators, the back radiator (RED COLOR-CODE) is placed on the reflector side of the boom at the point where the phasing lines mate with the inner insulator blocks on the RED back driven element.

< > Attach the phasing lines to the Back Radiator and level element with the Front Radiator.

< > Tighten U BOLTS on Back Radiator keeping element level.

### ASSEMBLY OF DIRECTOR AND REFLECTOR

(FIGURE 4)

< > Gather all BLACK color code pieces to begin assembly. (Items 29, 30, 31, 32, 33, 34, 35).

< > Make sure that all burrs of aluminum are removed from the (1" and 1-1/8") and (1-1/8" and 1-1/4") pieces of tubing before beginning this section.

< > Use a small amount of PENETROX on all telescoping pieces of tubing.

< > For the larger pieces of tubing the (1" and 1-1/8", Items 29, 30) used on the BLACK director, and the (1-1/8" and 1-1/4", Item 36, 37) used on the BROWN reflector, only apply the penetrox at the center where these pieces join together in the middle at the U-Bolt.

### ASSEMBLY OF BLACK DIRECTOR

(FIGURE 4)

< > Start by inserting the 1" BLACK coded sections with the single drill hole into the 1-1/8" BLACK stiffener. (Item 29, 30). Make sure that the U BOLT holes align. Also, pay attention that the remaining drill hole on the opposite end is in the same direction. (That is both sides outer holes are DOWN).

< > Insert a U BOLT into the element locking the 1" tubing into the 1-1/8" center stiffener. (Item 10, 29, 30). Secure U BOLT with the lock washers and nuts, (Item 10, 13, 11, 12) to keep U BOLT in place. Do NOT tighten at this time.

< > Insert the BLACK piece of 7/8" tubing (Item 31), into the 1" (Item 30). Secure the 7/8" to the 1" with a #8 screw. (Item 6).

< > Insert the BLACK/GREEN color coded trap into the exposed 7/8" tubing and secure with a #8 screw. (Item 31, 33, 6).

< > Place the short BLACK piece of 7/8" (Item 32) onto exposed 3/4" tube at end of trap. (Item 33). Secure with a #8 sheet metal screw. (Item 6).

< > Place the second trap color coded BLACK/GREEN/BLACK, (Item 34) into the exposed 7/8" connecting tube. (Item 32). Secure with #8 sheet metal screw. (Item 6).



- > Place the 5/8" BLACK end tip into the exposed end of the trap and secure with a #8 screw. (Item 34, 35, 6).
- < > Place the 5/8" end cap on the end of the 5/8" tubing. (Item 35, 7).
- < > Check to make sure trap drain holes and screws are facing downward. This is controlled by the correct placement of the 1" into the 1-1/8" center section.
- < > Complete the remaining side of the element following the same procedure as above. Recheck that all traps color code are correctly pointing in toward the boom. Once the check is complete remove the masking tape from the trap.
- < > This completes assembly of the Black Director Element.

#### ASSEMBLY OF REFLECTOR

(FIGURE 4)

- < > Repeat all of the above steps, which were used on the director, using the BROWN, BROWN/GREEN, BROWN/GREEN/BROWN color coded element sections and traps. (Items 36, 37, 38, 39, 40, 41, 42, 43, 6, 7, 10, 11, 12, 13).
- < > Check to make sure all drain holes are downward and element is completed correctly.
- < > Complete the remaining side of the element following the same procedure as above. Recheck that all traps color code are correctly pointing in toward the boom. Once the check is complete remove the masking tape from the trap.

#### ATTACHING THE DIRECTOR AND REFLECTOR TO THE BOOM

(FIGURE 5)

- < > Locate the Black mark on the end of the boom. Slide the BLACK element onto the top side of the boom.
- < > Place the element on top of the boom at the Black color-code on the boom. See Drawing.
- < > Level the element with the RADIATOR, making sure both elements are level with each other and at right angles to the MAST PLATE.
- < > Tighten U BOLT making sure U BOLT is butted up against BOOM. (NOTE: If U BOLT is not seated properly you can tighten U BOLT down on tubing and it will appear to be tight. To verify U Bolt is seated correctly tap bottom of U BOLT with a hammer to insure it is snug against boom.)
- > Repeat this same procedure with the Reflector element at other end of boom.
- > Recheck all elements and connections one last time. Make sure all elements are level and are at right angles to the mast plate.
- < > Place the 2" end caps on the boom. (Item 9).

### ATTACHING FEED LINE

(FIGURE 1, 3-A)

- < > Place a 3/8" clamp (Item 16) on each phasing line. (Item 20). Place these clamps so that the holes on the clamps are pointing inward toward each other. Use the 8-32 screw and lock washer to attach as shown in drawing. (Item 15, 16, 17, 18, 19, 20).
- < > The 3/8" clamp is placed 14-1/2" from the center of the screw on the insulator block of the FRONT DRIVEN BLUE element and the edge of the 3/8" clamp. See Drawing.
- < > Attach the "HOT" side of the coax to the phasing line FURTHEST away from the mast. Use the remaining #8 lock washer and 8-32 nut to secure to the 8-32 screw already on the 3/8" clamp. (Item 18, 19).
- < > Attach the BRAID side of the coax to the inner phasing line which is closest to the mast in the same manner using the #8 lock washer and 8-32 nut.
- < > Make sure the phasing line closest to the mast, when installed does not touch the mast itself.
- < > Make sure that the lead to the phasing line is no longer than 2-1/2" per lead.

### CHECKING ANTENNA BEFORE FINAL INSTALLATION

If you wish to check antenna on the ground it needs to be at least 10 to 12 feet off the ground in a horizontal position. Do not put reflector on ground or use other methods of checking.

A 10 to 12 foot wooden step ladder is a good structure to do a sample check.

Due to the high "Q" of the antenna it will couple with ground. Artificial or real. This type of check will allow you to see that the antenna is trying to dip and does possess a SWR curve. However, due to its nearness to ground this curve might be shifted lower infrequency and not totally bottom out to 1:1. This is normal.

A problem would be indicated if all bands are showing in excess of 2:1 with no dip of any kind.

### WATCH OUT FOR ARTIFICIAL GROUND

Artificial ground is presented to an antenna through various means. Guy wires up under the antenna, roof top, other resonant antennas nearby are the most common.

The antenna should be at least a 1/4 wave length from any artificial ground at the lowest operating frequency of the antenna. In the case of the TA-53-M the lowest frequency is 20 meters or 14 MHZ. With this in mind the antenna should be at least 17 feet away from any artificial ground. Remember this is a minimum.



to break up guy wires use an insulator every 4' for the first 16' or on metallic guys. This will give a non resonant length under the antenna and help its performance.

A sign of artificial ground will be a shift lower in frequency of the SWR curves and possibly a dip that doesn't reach 1:1 at its lowest point. Also, the SWR will rise at a faster rate when tuning to the higher portions of the band.

If you need any assistance with this type of a problem, please call us on our engineering line and we will be glad to discuss your installation with you.

#### **USE OF A BALUN OR NOT**

We do not require the use of a balun. It is not needed. The TA-53-M, is using our BALANCED "Q" match.

If a Balun is used make sure it is a 1:1. Keep the leads running from the balun to the phasing lines as short as possible. We do not recommend the use of a balun!

We do recommend an 8 to 12 foot separation between the TA-53-M and any other beam on the same mast.

#### **USE OF AN R.F. CHOKER**

(FIGURE 1)

lot of users confuse a Balun and a Choke. They are not the same. If you are experiencing some RF down your feed line or if you want to insure you have no RF down your feed line then a simple R. F. Choke made with your feed line will work well. This choke can be made by coiling 5 turns of your feed line in a 6" Inside Diameter right at the connection of the feed line to the RADIATOR.

This coil is just a loop of your feed line rolled up like a rope in the size mentioned. This coil is then taped immediately after the connection point to the radiator at the boom. If you have any questions, or if we can be of help, please let us know.

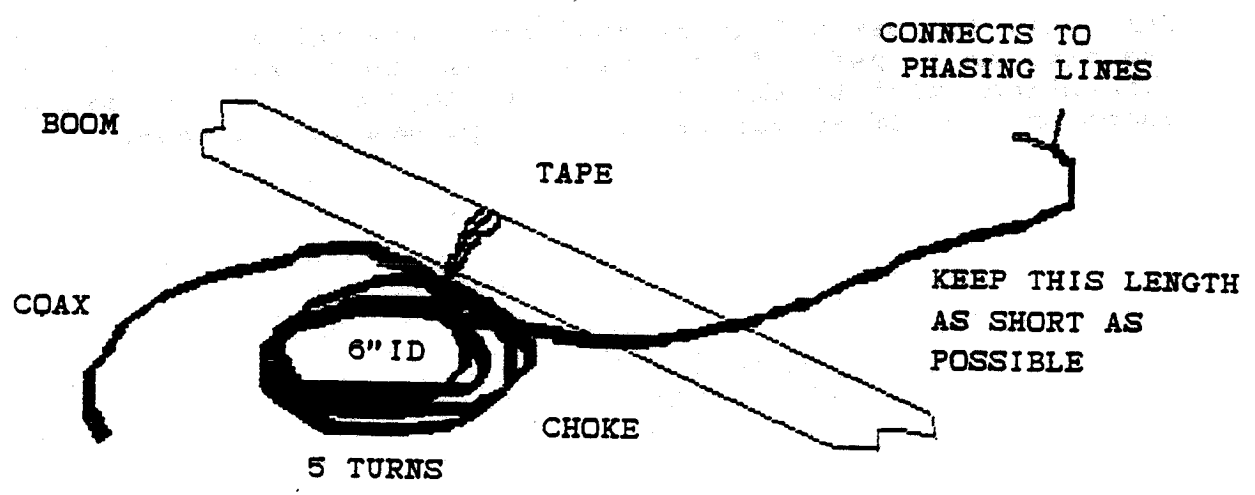
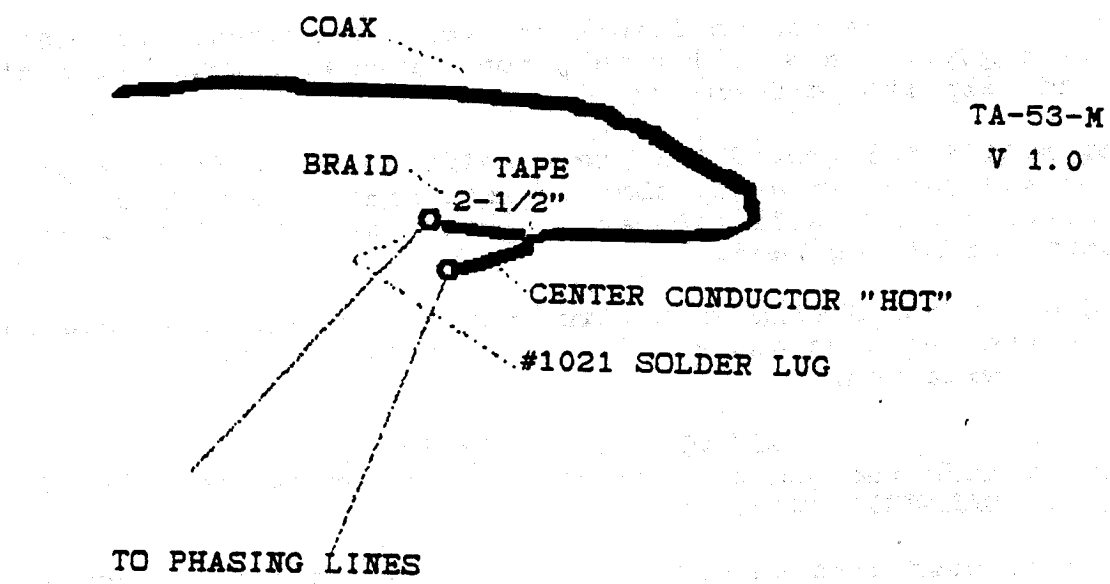


FIGURE 1



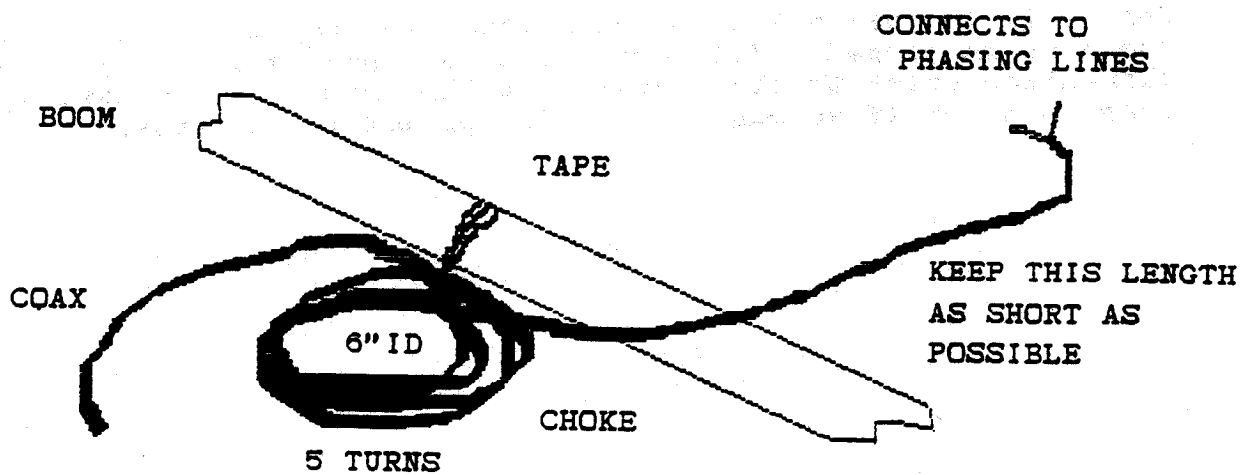
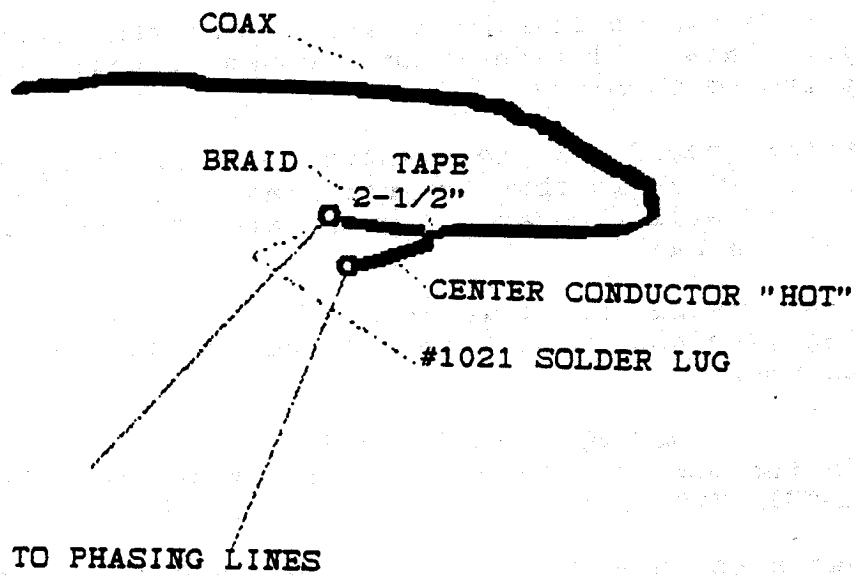


FIGURE 1

BOOM

TA-53-M  
V 1.0

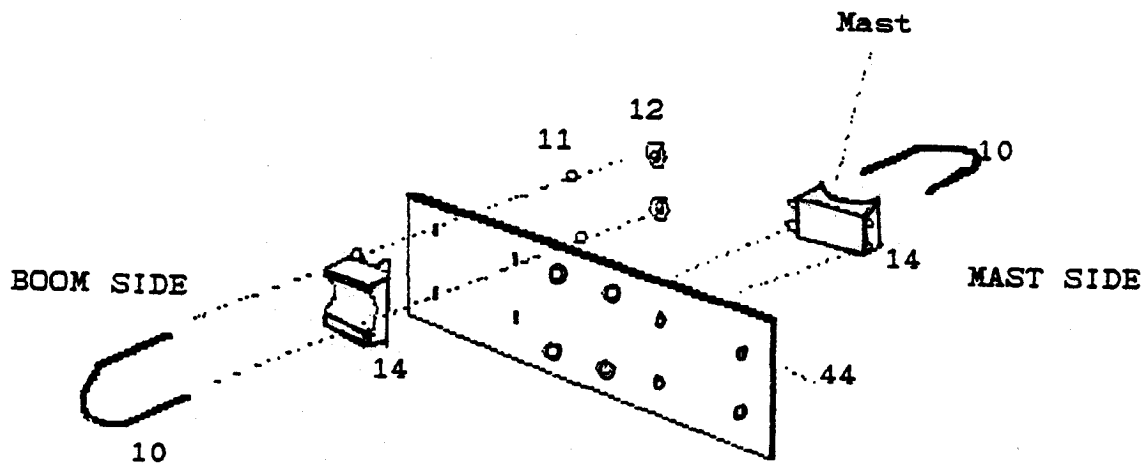
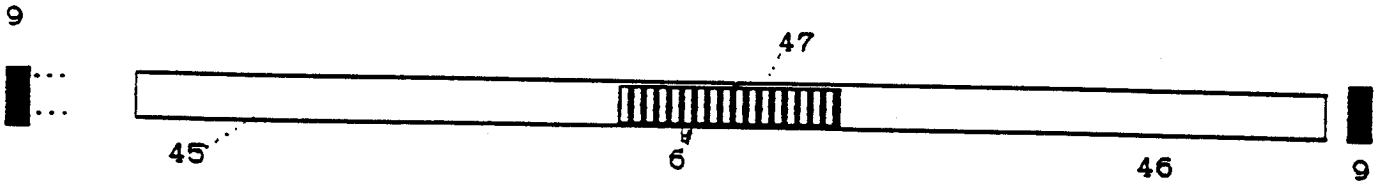


FIGURE 2



TA-53-M  
V 1.0

RED  
BACK DRIVEN ELEMENT

PHASING LINES

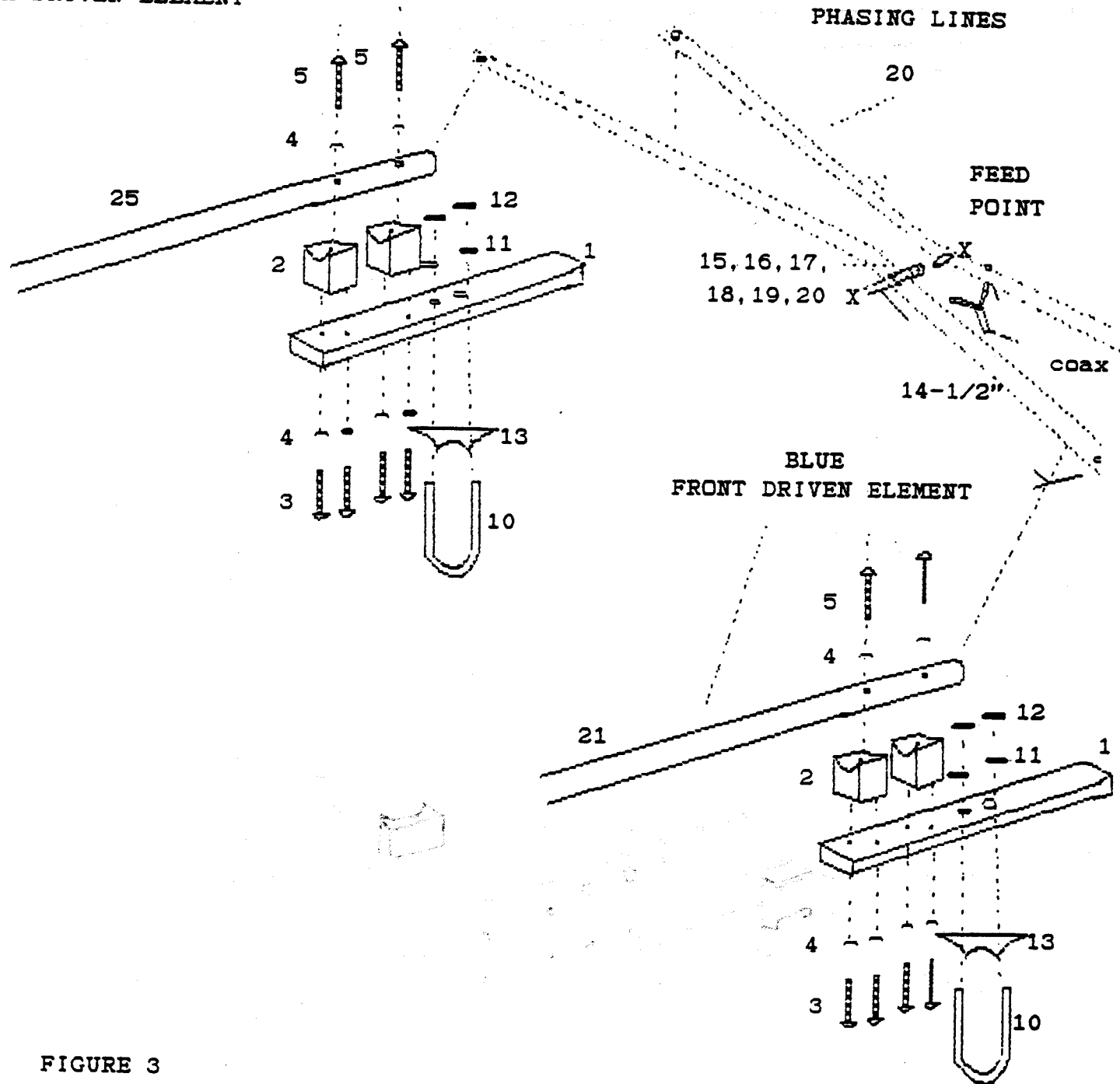
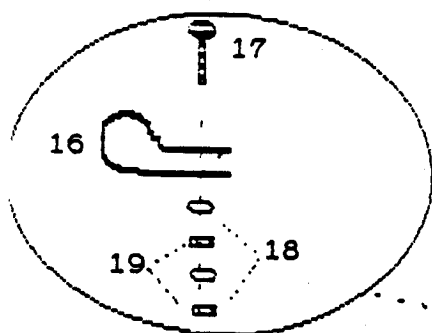
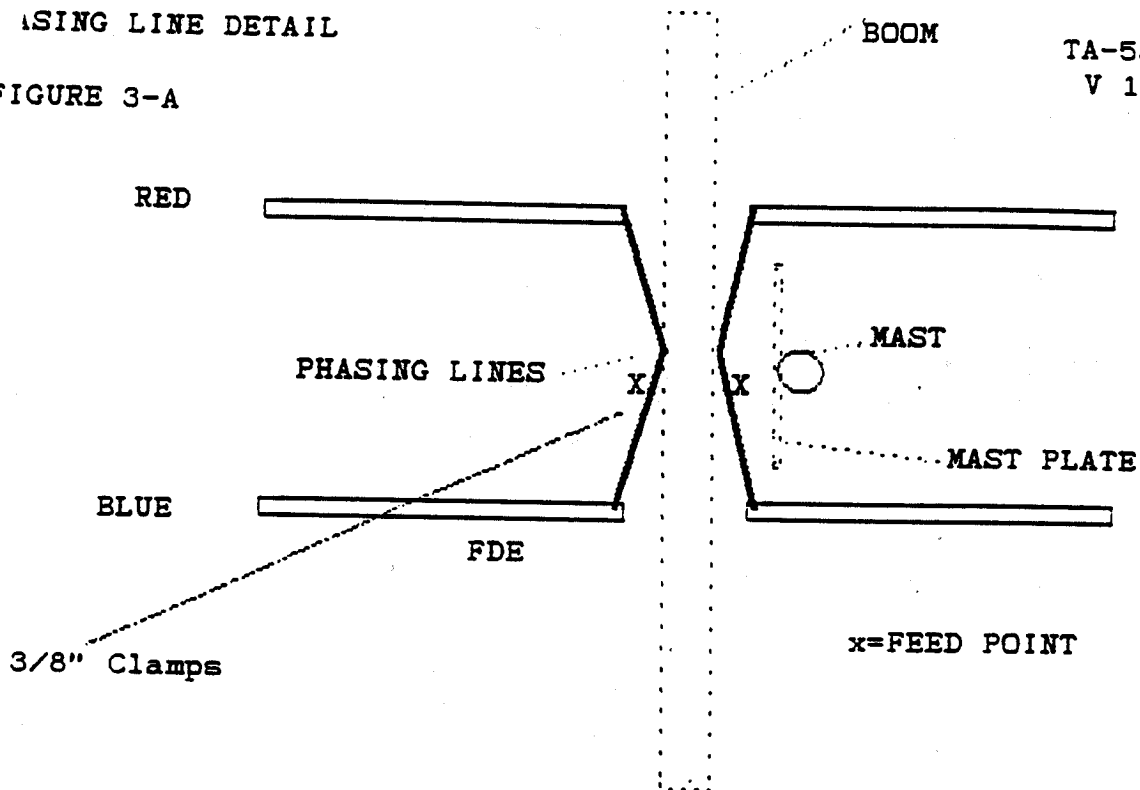


FIGURE 3

# ASING LINE DETAIL

FIGURE 3-A

TA-53-M  
V 1.0

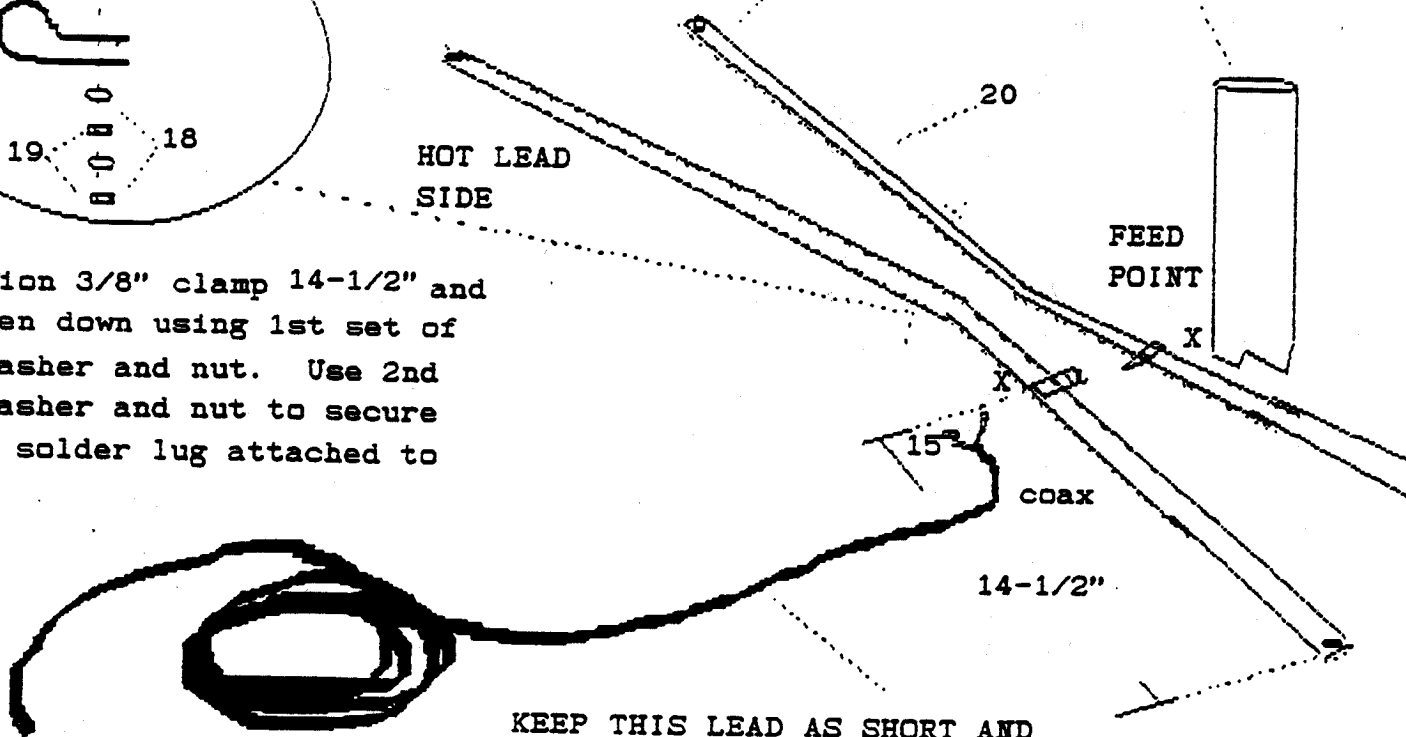


PHASING LINES

Side closest to mast  
connect the braided lead

HOT LEAD  
SIDE

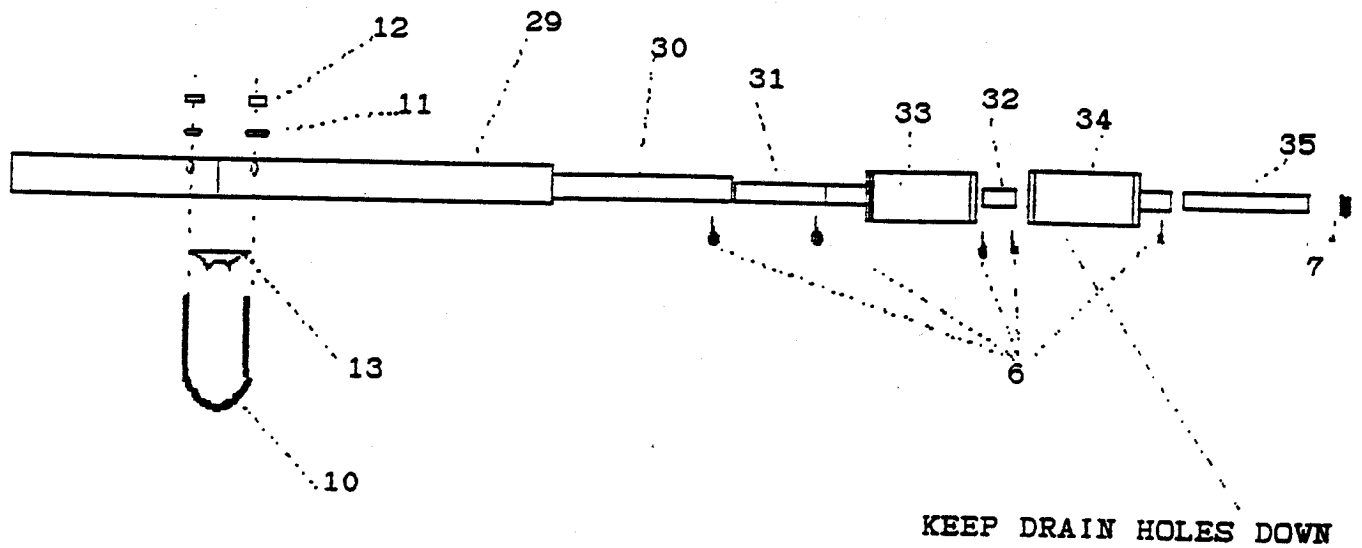
Position 3/8" clamp 14-1/2" and  
tighten down using 1st set of  
lockwasher and nut. Use 2nd  
lockwasher and nut to secure  
#1021 solder lug attached to  
coax.



KEEP THIS LEAD AS SHORT AND  
CLOSE TO COIL AS POSSIBLE

3-M  
1.0

# COMMON ELEMENT DIRECTOR BLACK



# COMMON ELEMENT REFLECTOR CODED BROWN

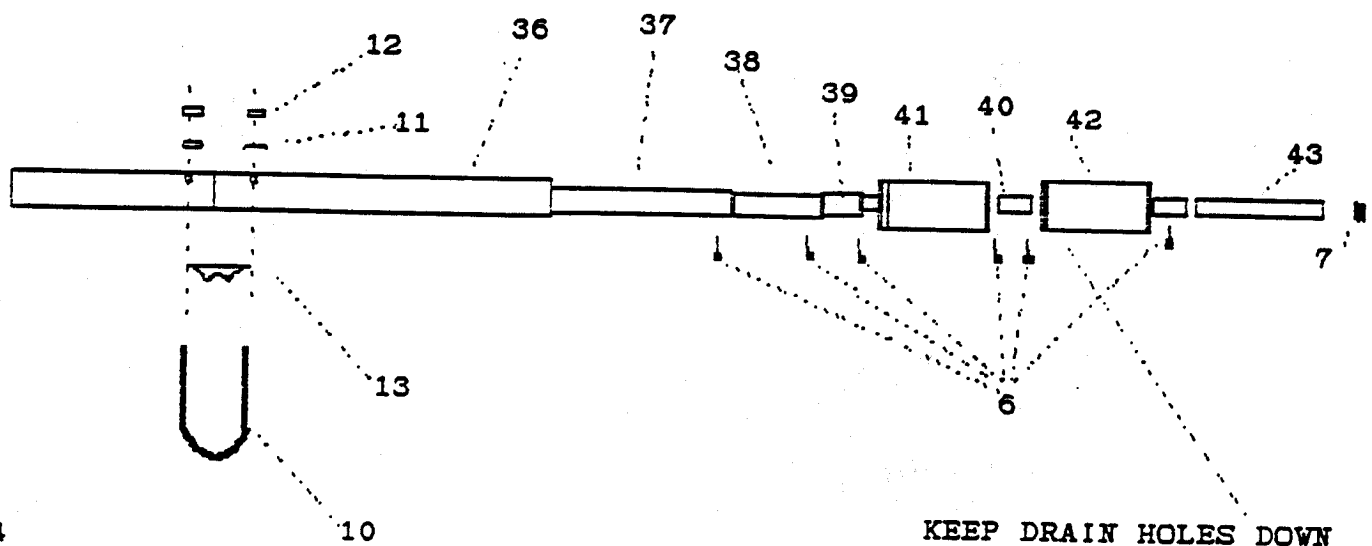


FIGURE 4

TA-53-M  
V 1.0

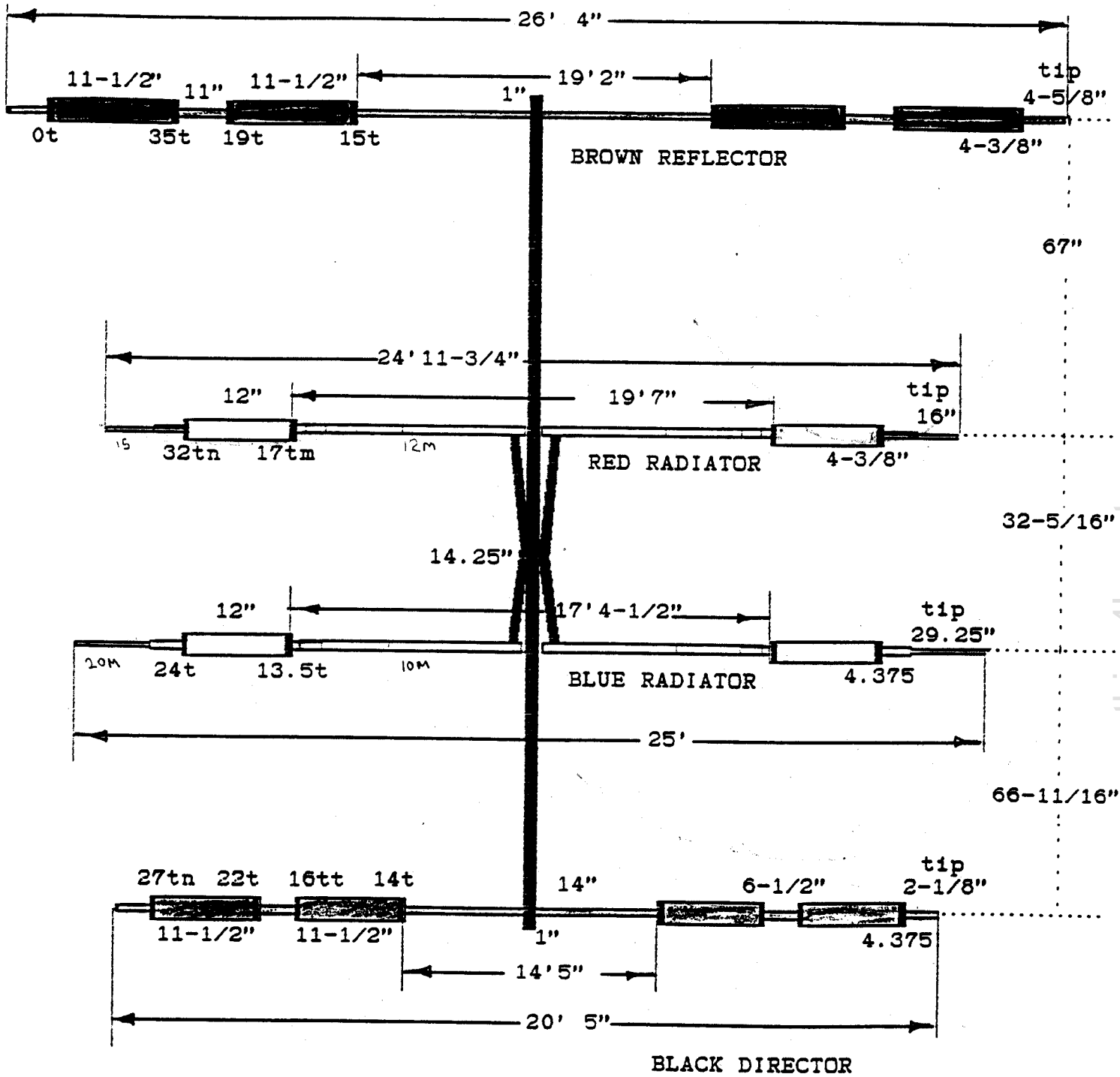


FIGURE 5



FIGURE 6

TA-53-M

TEST HEIGHT 45'

